TR45

Enhanced Emergency Services

PN-3581.5

ANSI J-STD-023 Stage 2 Modifications

Ballot Version

ENHANCED EMERGENCY SERVICES:
ANSI J-STD-023 STAGE 2 MODIFICATIONS

LIST OF FIGURES

LIST OF TABLES

None

FOREWORD

This Foreword is not part of this Interim Standard.

This is one of a series of recommendations entitled

"ENHANCED EMERGENCY SERVICES"

which provides a solution for the limited capabilities of wireless Enhanced Emergency Services. These capabilities include:

- provision of base station, cellsite or sector identification information

- subscriber identification

- callback

- reconnect

The recommendations included in this series are:

- PN-3581.1,   Enhanced Emergency Services: Functional Overview

- PN-3581.2,   Enhanced Emergency Services: PSAP Perspective

- PN-3581.3,   Enhanced Emergency Services: Emergency Services Stage 2

- PN-3581.4,   Enhanced Emergency Services: *ANSI/TIA/EIA 41* Stage 2
            Modifications

- PN-3581.5,   Enhanced Emergency Services: *ANSI J-STD-023* Stage 2
            Modifications

- PN-3581.6,   Enhanced Emergency Services: *TIA/EIA/IS-93* Modifications

- PN-3581.7,   Enhanced Emergency Services: *ANSI/TIA/EIA 41* Stage 3
            Modifications

- PN-3581.8,   Enhanced Emergency Services: *ANSI J-STD-024*
            Modifications

REVISION HISTORY

Revision	Date	Remarks
0	????	Initial Publication
A		
B		

NOTE

The numbering system of this series of Interim Standards varies from normal TIA/EIA practice. The unique numbering system assigned to these documents is intended to reflect their hierarchical structure.

1.   INTRODUCTION

1.1   OBJECTIVE

This document presents recommendations for modifications to *ANSI J-STD-023* Stage 2 for the support Enhanced Emergency Services.

1.2   SCOPE

This document provides a solution for modifications to *ANSI J-STD-023 41* Stage 2 to support Enhanced Emergency Services.

1.3   ORGANIZATION

This document is organized by the following sections:

- Section 1, entitled "Introduction," provides introductory information for this Interim Standard.

- Section 2, entitled "References," lists the normative and informative references for this Interim Standard.

- Section 3, entitled "Terminology," lists the definitions, symbols, abbreviations, and other documentation conventions used in this Interim Standard.

- Section 4, entitled *"ANSI J-STD-023* Stage 2 Modifications," defines the modifications to the intersystem messaging in *ANSI J-STD-023* necessary to support Enhanced Emergency Services.

2.   REFERENCES

The *ANSI/TIA/EIA 41* recommendations are:

- ANSI/TIA/EIA 41.1,   *Cellular   Radiotelecommunications   Intersystem Operations:*
  Functional Overview

- ANSI/TIA/EIA 41.2,   *Cellular   Radiotelecommunications   Intersystem Operations: Intersystem Handoff Information Flows*

- ANSI/TIA/EIA 41.3,   *Cellular   Radiotelecommunications   Intersystem Operations:*
  Automatic Roaming Information Flows

- ANSI/TIA/EIA 41.4,   *Cellular   Radiotelecommunications   Intersystem Operations: Operations, Administration, and Maintenance Information Flows*

- ANSI/TIA/EIA 41.5,   *Cellular   Radiotelecommunications   Intersystem Operations:*
  Signaling Protocols

- ANSI/TIA/EIA 41.6,   *Cellular Radiotelecommunications Intersystem Operations: Signaling Procedures*

The *TIA/EIA/IS-93* recommendations are:

- TIA/EIA/IS-93-0,   *Cellular   Radio   Telecommunications   Ai - Di Interfaces*

The *ANSI J-STD-023* recommendations are:

- ANSI J-STD-023,   *PCN to PCN Intersystem Operations based on PCS1900 Standard, approved for publication.*

The *ANSI J-STD-024* recommendations are:

- ANSI J-STD-024,   *Personal Communication Services, SS7 based A-interface Standard, approved for publication.*

3.   TERMINOLOGY

3.1   DEFINITIONS

Refer to IS-911.1.

3.2   SYMBOLS AND ABBREVIATIONS

Refer to IS-911.1.

4.   *ANSI J-STD-023* Stage 2 Modifications

4.1   9-1-1 Dialed in Call After Intersystem Handoff

This scenario describes a 9-1-1 call dialed within a call causing a three-way call (with call processing modifications) following an intersystem handoff. This call will be set up from the Anchor MSC (if an intersystem handoff has occurred).

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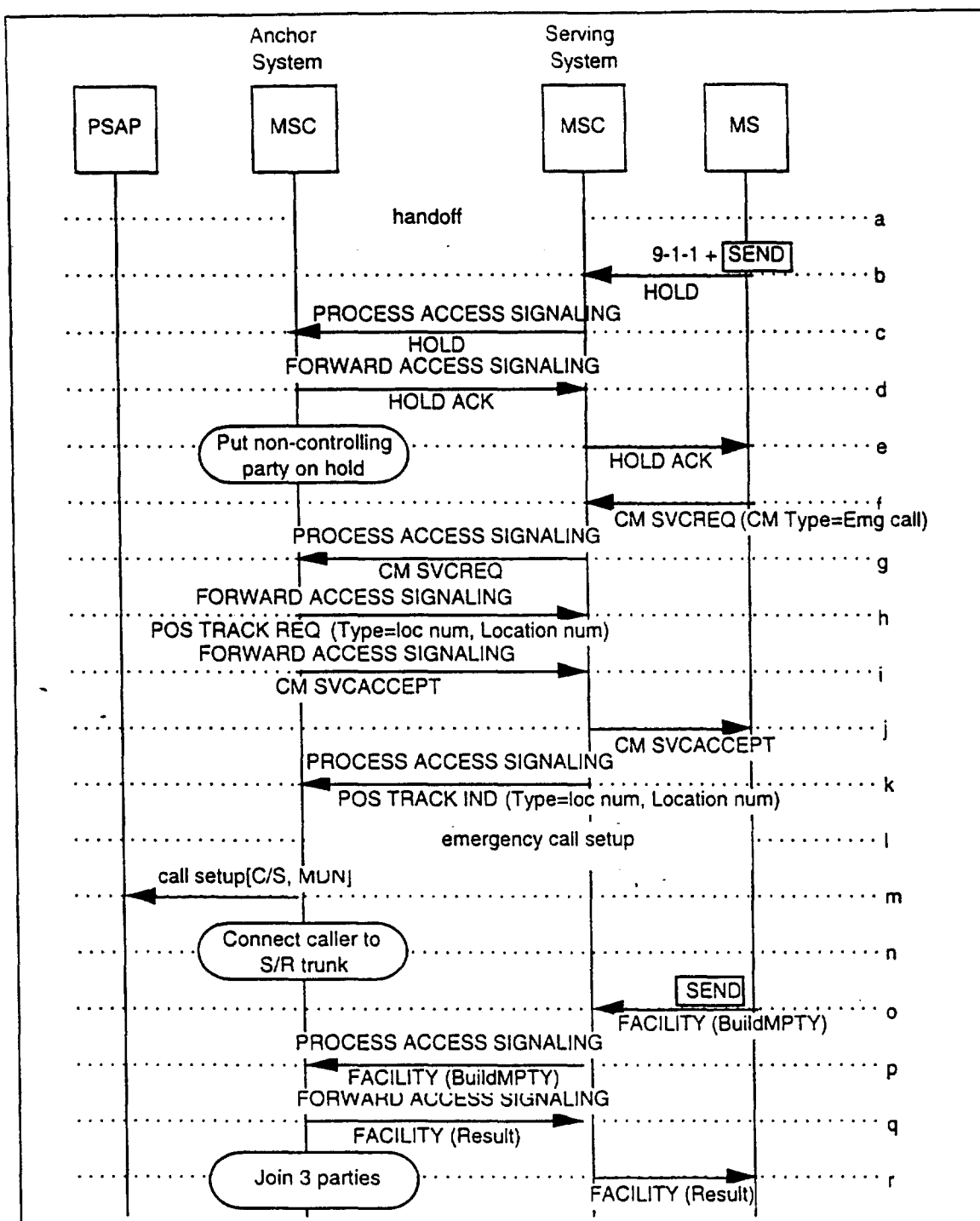47
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53
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59
60

Figure 9   9-1-1 Dialed in Call After Intersystem Handoff

a.   A call is handed off from one MSC to another.

b.   Later, the user presses 9-1-1 + SEND (e.g., to initiate an emergency call). The MS generates a HOLD message to request that the existing call be placed on hold.

c.   The Serving MSC encapsulates the HOLD message into a PROCESS ACCESS SIGNALING message and sends it to the anchor MSC.

d.   The Anchor MSC verifies that the subscriber has access to the Hold service and if so, places the non-controlling party on hold and returns a HOLD ACK message (encapsulated in a FORWARD ACCESS SIGNALING message).

e.   The Serving MSC forwards the HOLD ACK message to the MS confirming that the call has been put on hold.

f.   The MS sends a CM SERVICE REQUEST with type set to emergency call.

g.   The Serving MSC encapsulates the CM SERVICE REQUEST message into a PROCESS ACCESS SIGNALING message and sends it to the anchor MSC.

h.   The Anchor MSC recognizes that an emergency call is being requested and sends a POSITION TRACKING REQUEST (encapsulated in a FORWARD ACCESS SIGNALING message) to the Serving MSC. The type of information requested is the location number and the response method is set to once only.

i.   The Anchor MSC accepts the emergency call setup request via the CM SERVICE ACCEPT (encapsulated in a FORWARD ACCESS SIGNALING message) to the MS (via the serving MSC).

j.   The Serving MSC forwards the CM SERVICE ACCEPT to the MS.

k.   The Serving MSC provides the location number associated with the current position of the subscriber and returns this to the Anchor MSC via the POSITION TRACKING INDICATION (encapsulated in a PROCESS ACCESS SIGNALING message).

l.   An emergency call is setup according to the standard PCS-1900 call setup flows.

m.   The Anchor MSC routes a call to a Selective Router, possibly via a tandem switch (not shown in this scenario). The following information is transmitted.

Parameters	Usage	Type
ESRD	EmergencyServicesRoutingDigits A unique identifier of a specific base station, cellsite or sector.	R
MDN	MobileDirectoryNumber. Identifies the MS from which 9-1-1 was dialed.	R

n.   The caller is in conversation with the PSAP as soon as the call is answered at the PSAP.

o.   Later, the user presses 3 + SEND. This causes the MS to generate a FACILITY message requesting that a multiparty call be built.

p.   The Serving MSC encapsulates the FACILITY message in a PROCESS ACCESS SIGNALING message and sends it to the Anchor MSC.

q.   The Anchor MSC checks that the subscriber has multiparty capability and if so joins the held and active parties. A FACILITY response message is returned to the MS (encapsulated in a FORWARD ACCESS SIGNALING message) via the Serving MSC.

r.   The serving MSC forwards the FACILITY response message to the MS.

4.2   Emergency Call Reconnect After Intersystem Handoff

For further study.

4.3   Callback Using Standard Roamer Port

For further study.

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PN-3581.6

TIA/EIA/IS-93 Modifications

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TIA/EIA/IS-93 MODIFICATIONS

LIST OF FIGURES

LIST OF TABLES

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
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47
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49
50
51
52
53
54
55
56
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58
59
60

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1.   INTRODUCTION

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This document presents recommendations for modifications to *TIA/EIA/IS-93* to support Enhanced Emergency Services.

1.2   SCOPE

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- Section 3, entitled "Terminology," lists the definitions, symbols, abbreviations, and other documentation conventions used in this Interim Standard.

- Section 4, entitled "*TIA/EIA/IS-93* Modifications," defines the modifications to the A_i and D_i interfaces, defined in *TIA/EIA/IS-93*, to support Enhanced Emergency Services.

2.   REFERENCES

The *ANSI/TIA/EIA 41* recommendations are:

- ANSI/TIA/EIA 41.1,   *Cellular   Radiotelecommunications   Intersystem Operations:*
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3.   TERMINOLOGY

3.1   DEFINITIONS

Refer to IS-911.1.

3.2   SYMBOLS AND ABBREVIATIONS

Refer to IS-911.1.

4. *TIA/EIA/IS-93* Modifications

4.1 Foreword (This foreword is not part of this Interim Standard.)

The specification of interface compatibility requirements for interfaces between Cellular Carrier networks and other carrier networks was initiated under the auspices of the ANSI accredited Telecommunications Industry Association Committee TR-45.

The purpose of this Interim Standard is to enable separate telecommunications elements to provide compatible interconnecting equipment and signaling.

To accomplish this purpose, this Interim Standard provides signaling protocol requirements for interfaces that interconnect a switching system in a Cellular Carrier network with a switching system in another network (i.e., Exchange Carrier (EC), Interexchange Carrier (IC), International Carrier (INC), Consolidated Carrier or other carrier network). Within the context of this Interim Standard, a Cellular Carrier network can provide the capabilities available in other carrier networks.

It is expected that the telecommunications industry will combine protocols, or parts of protocols, from this Interim Standard to provide telecommunications services.

~~There is one annex in this Interim Standard. Annex A is informative and is not considered part of this Interim Standard.~~

4.2 References

4.2.1 Normative References

American National Standards Institute (ANSI) T1 standards:

American National Standards Institute, Inc., American National Standard for Telecommunications, *Routing, Bridging and Transfer of Emergency Service Calls:* Exchange Carriers Standards Association Committee T1: T1.628-1993.

Telecommunications Industry Association (TIA) standards, Interim Standards and Telecommunications Services Bulletins (TSBs):

ANSI/TIA/EIA 41: *Cellular Radio Telecommunications Intersystem Operations, 1997.*

EIA/TIA Interim Standard IS-41-B, *Cellular Radio Telecommunications Intersystem Operations*; December, 1991.

ANSI/TIA/EIA 664: *Cellular Features Description, 1996.*

EIA/TIA Interim Standard IS-53, *Cellular Features Description*; August, 1991.

ANSI/TIA/EIA 660: *Uniform Dialing, 1996.*

International Telecommunications Union (ITU) (International Telegraph and Telephone Consultative Committee (CCITT)) standards:

CCITT 1988 (Blue Book), Volume II - Fascicle II.2, *Telephone Network and ISDN - Operation, Numbering, Routing and Mobile Service*; Recommendations E.100 - E.333.

CCITT 1988 (Blue Book), Volume VI - Fascicle VI.9, *Specifications of Signaling System No. 7*; Recommendations Q.771 - Q.795.

4.3 Acronyms (IS-93 Section 3.1)

ESNE   Emergency Services Network Entity

ESRD   EmergencyServicesRoutingDigits parameter

ITU   International Telecommunications Union

~~ESAP   Emergency Services Access Point~~

MDN   MobileDirectoryNumber (equivalent to a Mobile Station ISDN number) parameter

PSAP   Public Safety Answering Point

4.4 Definitions (IS-93 Section 3.2)

For the purposes of this Interim Standard, the following definitions apply.

Emergency Services Network Entity - An entity in the emergency services network which serves as the point of interface to an MSC.

EmergencyServicesRoutingDigits - A digit string that uniquely identifies a base station, cellsite or sector. This number may also be used to route a call to the appropriate ESNE, and consequently must be a network routable number (but not necessarily a dialable number).

~~**Emergency Services Access Point** - An emergency services network element that is responsible for answering emergency calls.~~

Public Safety Answering Point - An emergency services network element that is responsible for answering emergency calls.

World Numbering Plan - A plan created by the ITU~~CCITT~~ that provides each telephone subscriber with a unique number. Each world telephone number consists of a country code followed by the national number as defined in ITU~~CCITT~~ Recommendation~~s E.163 and~~ E.164.

World Zone 1 (WZ1) - The group of countries in the World Numbering Plan that are identified by the single-digit country code 1. World Zone 1 is defined in ITU~~CCITT~~ Recommendation~~s E.163 and~~ E.164.

4.5   Network Interface Table

Table 1:   Network Interface Types

Interface Type	Description	Signaling Method	Key Signaling Information
POI-T1 POI-T2 (for further study) POI-T3 (for further study)	Trunk with Line Treatment (TWLT)	MF BRI (for further study) PRI (for further study)	Called Number
POI-T4 POI-T5 & POI-S5	General Trunk Access	MF ISUP	Called Number Charge Number Originating Line Information Carrier Identification
POI-T6 POI-T7 & POI-S7	Direct Trunk Access	MF ISUP	Called Number
POI-T8 (for further study) POI-T9 & POI-S9 (for further study)	Emergency Services Access (for further study)	MF (to Emergency Services network elementEmergency Services Tandem, ESAP) ISUP (to Emergency Services network elementEmergency Services Tandem, ESAP)	ESAP Identification ESRD Subscriber Identification
...	...	...	...